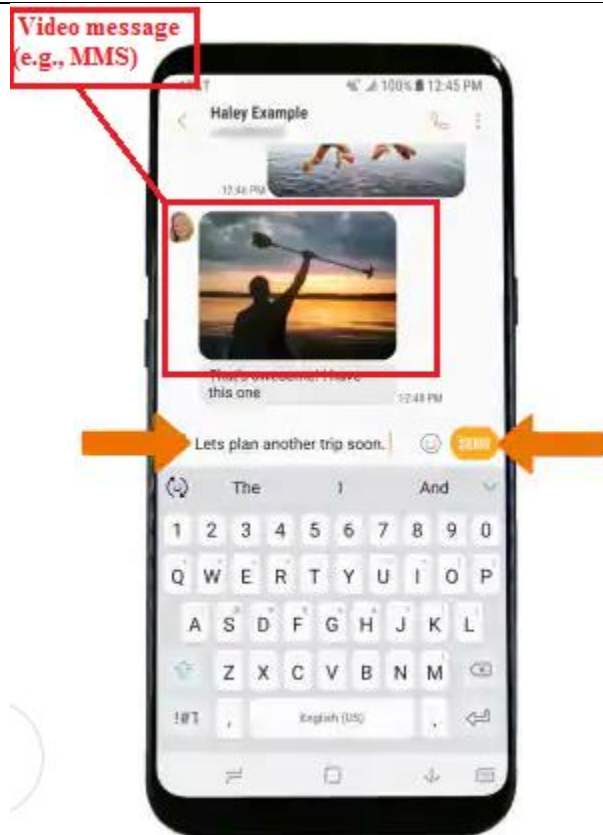


EXHIBIT 2

EXHIBIT 2

US9237427	AT&T's MMS Service ("The accused instrumentality")
1. A method of transmitting video messages to a mobile phone, the method comprising:	<p>The accused instrumentality practices a method of transmitting video messages (e.g., Video messages in the form of MMS) to a mobile phone.</p> <p><i>Picture and video messaging details</i></p> <p><u>Device and network requirements</u></p> <p><u>Picture and video messaging uses Multimedia Messaging Service (MMS) to send and receive audio, video, and picture messages. To use picture and video messaging:</u></p> <ul style="list-style-type: none"> • <u>You must have a picture and video messaging-capable wireless phone.</u> • You must be on an LTE or GSM network supporting GPRS transport. • Your phone must be on and in a data coverage area to receive the picture or video message. • If the phone is off or out of the coverage area, the message will be stored for up to 72 hours and delivered when the phone becomes available. <p><u>About phones without picture and video messaging</u></p> <p><u>Some wireless phones aren't capable of receiving picture and video messages:</u></p> <ul style="list-style-type: none"> • <u>If your phone isn't capable of receiving a picture or video message, you'll receive a text message explaining how to view it.</u> • <u>If you send a message to a phone incapable of viewing picture and video messages, the recipient receives a text message with a link to view your message online.</u> • Some wireless providers may not deliver these messages to their customers. <p>https://www.att.com/support/article/wireless/KM1041906/</p>

EXHIBIT 2



https://www.att.com/devicehowto/tutorial.html#!/stepbystep/id/stepbystep_KM1260642?make=Samsung&model=SamsungG950U

As shown below, the accused instrumentality utilizes GPRS to provide MMS services.

EXHIBIT 2

Picture and video messaging details

Device and network requirements

Picture and video messaging uses Multimedia Messaging Service (MMS) to send and receive audio, video, and picture messages. To use picture and video messaging:

- You must have a picture and video messaging-capable wireless phone.
- You must be on an LTE or GSM network supporting GPRS transport.
- Your phone must be on and in a data coverage area to receive the picture or video message.
- If the phone is off or out of the coverage area, the message will be stored for up to 72 hours and delivered when the phone becomes available.

<https://www.att.com/support/article/wireless/KM1041906/>

EXHIBIT 2

4.2 Involved MMS Elements

Figure 2 shows that multimedia messaging may encompass many different network types. The basis of connectivity between these different networks shall be provided by the Internet protocol and its associated set of messaging protocols. This approach enables messaging in 2G and 3G wireless networks to be compatible with messaging systems found on the Internet.

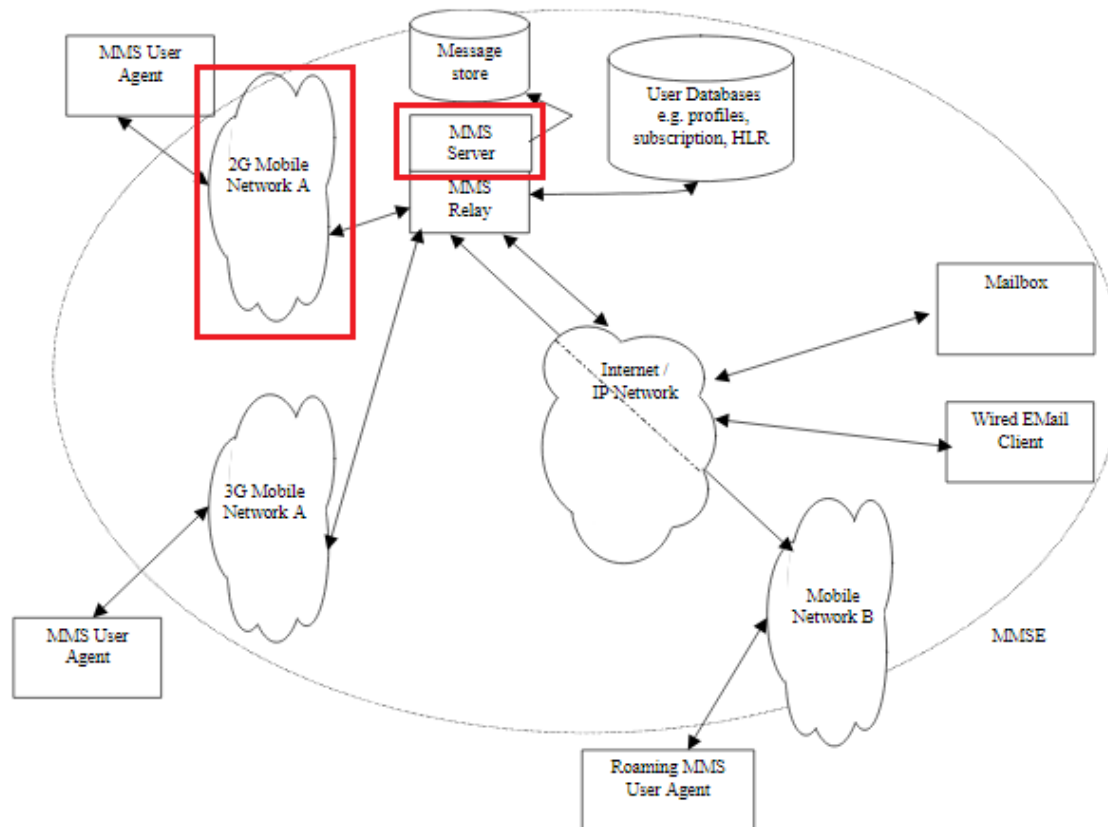
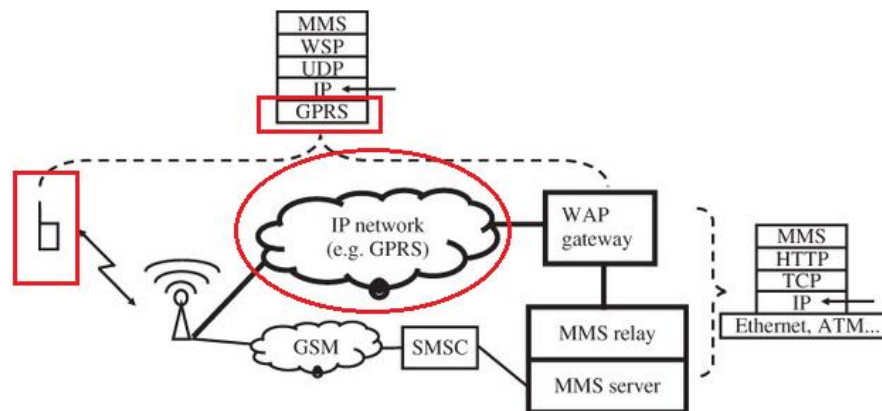


Figure 2: MMS Architectural Elements

https://www.etsi.org/deliver/etsi_ts/123100_123199/123140/03.00.01_60/ts_123140v030001p.pdf

EXHIBIT 2



If a mobile device wants to send an MMS message, it establishes an IP connection to the MMS server via the GPRS network. The PDP context activation procedure that is required to get an IP address in the first place has already been described before. Instead of using the same APN as for a transparent connection to the Internet, the MMS service usually requires its own APN. This enables the operator to charge separately for the MMS traffic. As ...

https://www.oreilly.com/library/view/from-gsm-to/9780470978221/c02_level1_11.xhtml

receiving
over a
network at a
message
management
system a
request from
a user that a
video
message be
sent to a
recipient

The accused instrumentality practices receiving over a network (e.g., GPRS network) at a message management system (e.g., MMS system comprising MMS Sever and MMS Relay) a request (e.g., M-Send.req message) from a user (e.g., sender of the MMS) that a video message (e.g., video message in the form of MMS) be sent to a recipient mobile phone.

EXHIBIT 2

mobile
phone;**6.1 Sending of Multimedia Message**

The Send transaction of the MM consists of two messages: M-Send.req and M-Send.conf. The transaction identifier is created and used by the originating MMS Client and it is unique within the send transaction only.

6.1.1 Send Request

This chapter describes the header fields of the M-Send.req sent by the MMS Client to the MMS Proxy-Relay, and how these header fields may be modified by the sender's MMS Proxy-Relay. These header fields are used to generate the MMS notification to the recipient, and are delivered with the message body parts to the recipient MMS Client at retrieval.

Table 1 contains the field names, the field values and descriptions of the header fields of M-Send.req PDU.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-send-req	Mandatory. Specifies the PDU type.
X-Mms-Transaction-ID	Transaction-id-value	Mandatory. A unique identifier for the PDU. This transaction ID identifies the M-Send.req and the corresponding reply only.
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.3.
Date	Date-value	Optional. Date and time of submission of the M-Send.req PDU. If the field was not provided by the sending MMS Client, the MMS Proxy-Relay SHALL insert the time of arrival of the M-Send.req PDU at the MMS Proxy-Relay.
From	From-value	Mandatory. Address of the originator MMS Client. The originator MMS Client MUST send either its address or an Insert-address-token. In case of token, the MMS Proxy-Relay MUST insert the correct address of the originator MMS Client.
To	To-value	Optional ¹ . Address of the recipient. Addressing is handled in Chapter 8. This header field MAY appear multiple times.

https://www.openmobilealliance.org/release/MMS/V1_2-20050429-A/OMA-MMS-ENC-V1_2-20050301-A.pdf

EXHIBIT 2

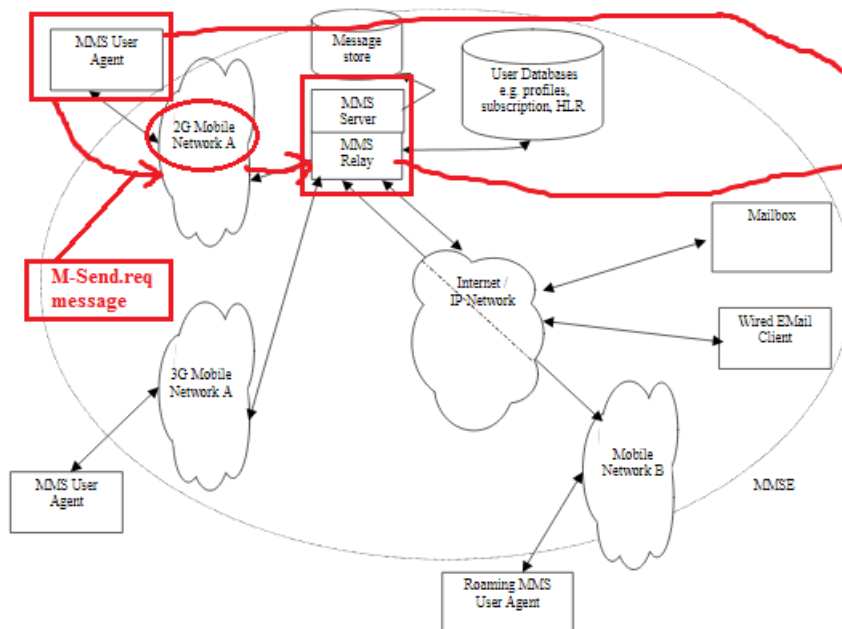


Figure 2: MMS Architectural Elements

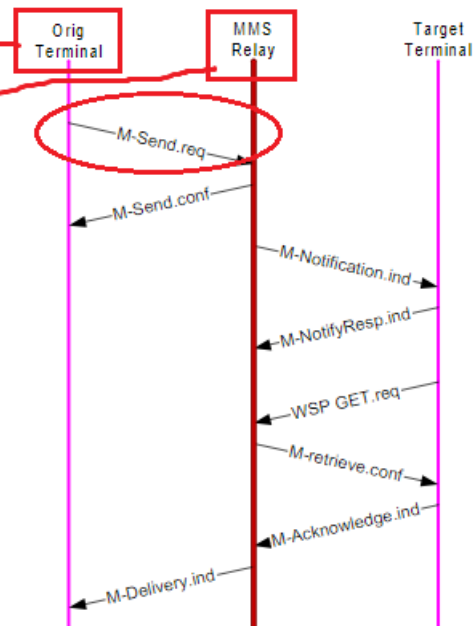
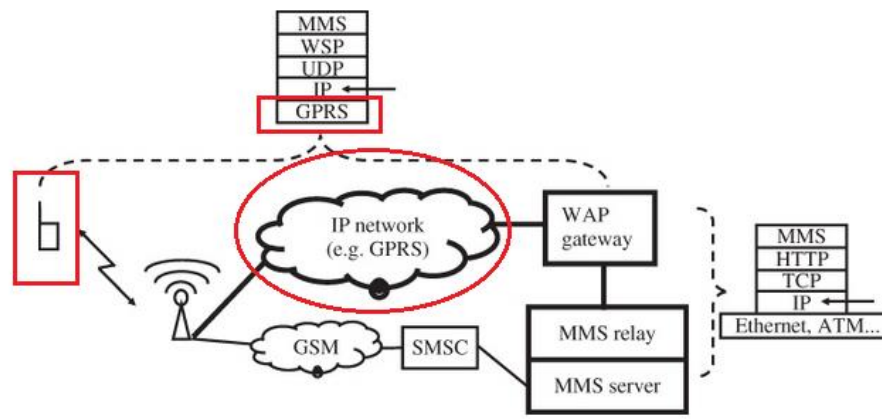


Figure 8: Example MMS Transactional Flow in WAP

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EXHIBIT 2



If a mobile device wants to send an MMS message, it establishes an IP connection to the MMS server via the GPRS network. The PDP context activation procedure that is required to get an IP address in the first place has already been described before. Instead of using the same APN as for a transparent connection to the Internet, the MMS service usually requires its own APN. This enables the operator to charge separately for the MMS traffic. As ...

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transmitting
an
authorizatio
n request
message to a
mobile
phone
associated
with the
user,

The accused product practices transmitting an authorization request (e.g., RAND message as authentication and ciphering request) to a mobile phone associated with the user, wherein the user needs to provide a user authorization response (e.g., SRES response message) in order for the video message (e.g., the video message in the form of MMS) to be sent to the recipient.

As shown below the accused instrumentality utilizes GPRS network (e.g., 2G Network) in order to provide MMS services.

EXHIBIT 2

Picture and video messaging details

Device and network requirements

Picture and video messaging uses Multimedia Messaging Service (MMS) to send and receive audio, video, and picture messages. To use picture and video messaging:

- You must have a picture and video messaging-capable wireless phone.
- You must be on an LTE or GSM network supporting GPRS transport.
- Your phone must be on and in a data coverage area to receive the picture or video message.
- If the phone is off or out of the coverage area, the message will be stored for up to 72 hours and delivered when the phone becomes available.

<https://www.att.com/support/article/wireless/KM1041906/>

EXHIBIT 2

4.2 Involved MMS Elements

Figure 2 shows that multimedia messaging may encompass many different network types. The basis of connectivity between these different networks shall be provided by the Internet protocol and its associated set of messaging protocols. This approach enables messaging in 2G and 3G wireless networks to be compatible with messaging systems found on the Internet.

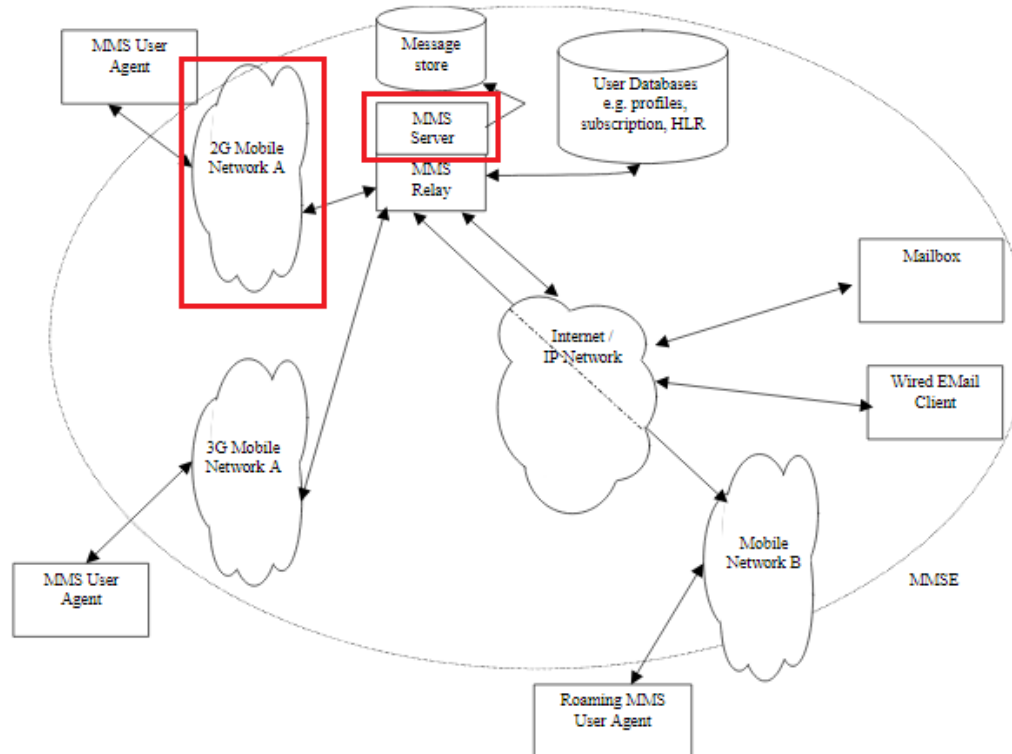
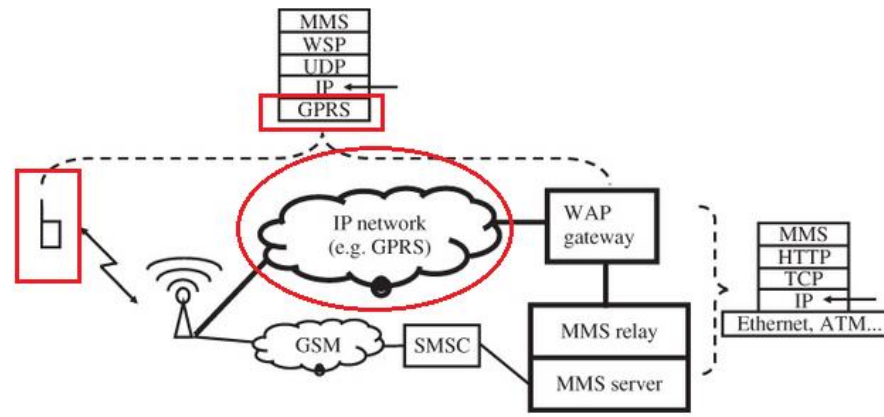


Figure 2: MMS Architectural Elements

https://www.etsi.org/deliver/etsi_ts/123100_123199/123140/03.00.01_60/ts_123140v030001p.pdf

EXHIBIT 2



If a mobile device wants to send an MMS message, it establishes an IP connection to the MMS server via the GPRS network. The PDP context activation procedure that is required to get an IP address in the first place has already been described before. Instead of using the same APN as for a transparent connection to the Internet, the MMS service usually requires its own APN. This enables the operator to charge separately for the MMS traffic. As ...

https://www.oreilly.com/library/view/from-gsm-to/9780470978221/c02_level1_11.xhtml

As shown below, a RAND message in the form of a request is transmitted to the user.

EXHIBIT 2

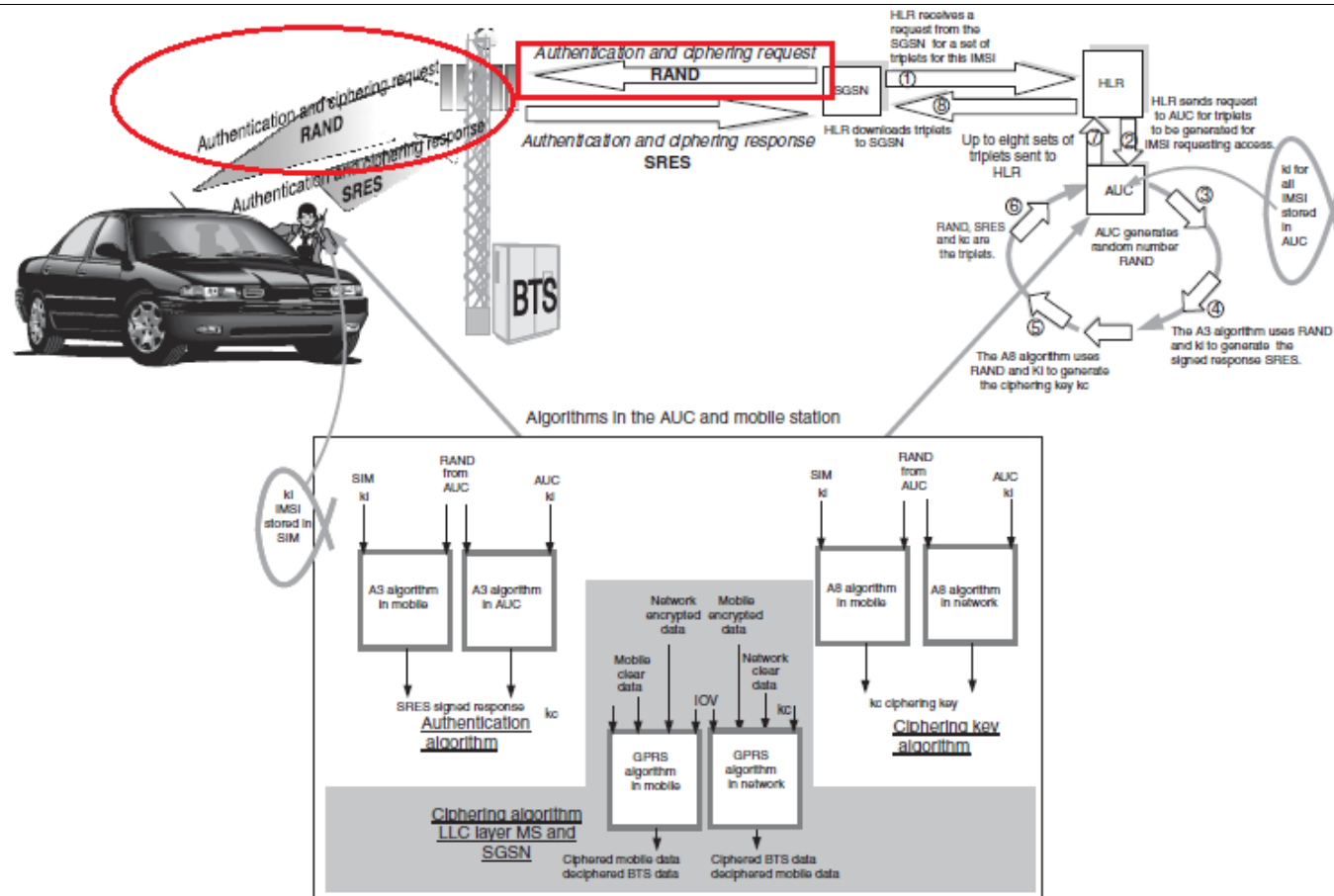


Figure 10.7 GMM procedures – authentication

https://books.google.co.com/books/about/GPRS_in_Practice.html?id=ayRnFl0EvaEC

As shown below, in response to the RAND request message, the user sends SRES message as a response to the network. Consequent upon

EXHIBIT 2

authorization response in order for the video message to be sent to the recipient; at least partly in response to receiving an authorization response from the user, initiating the transmission of the video message to the recipient mobile phone;

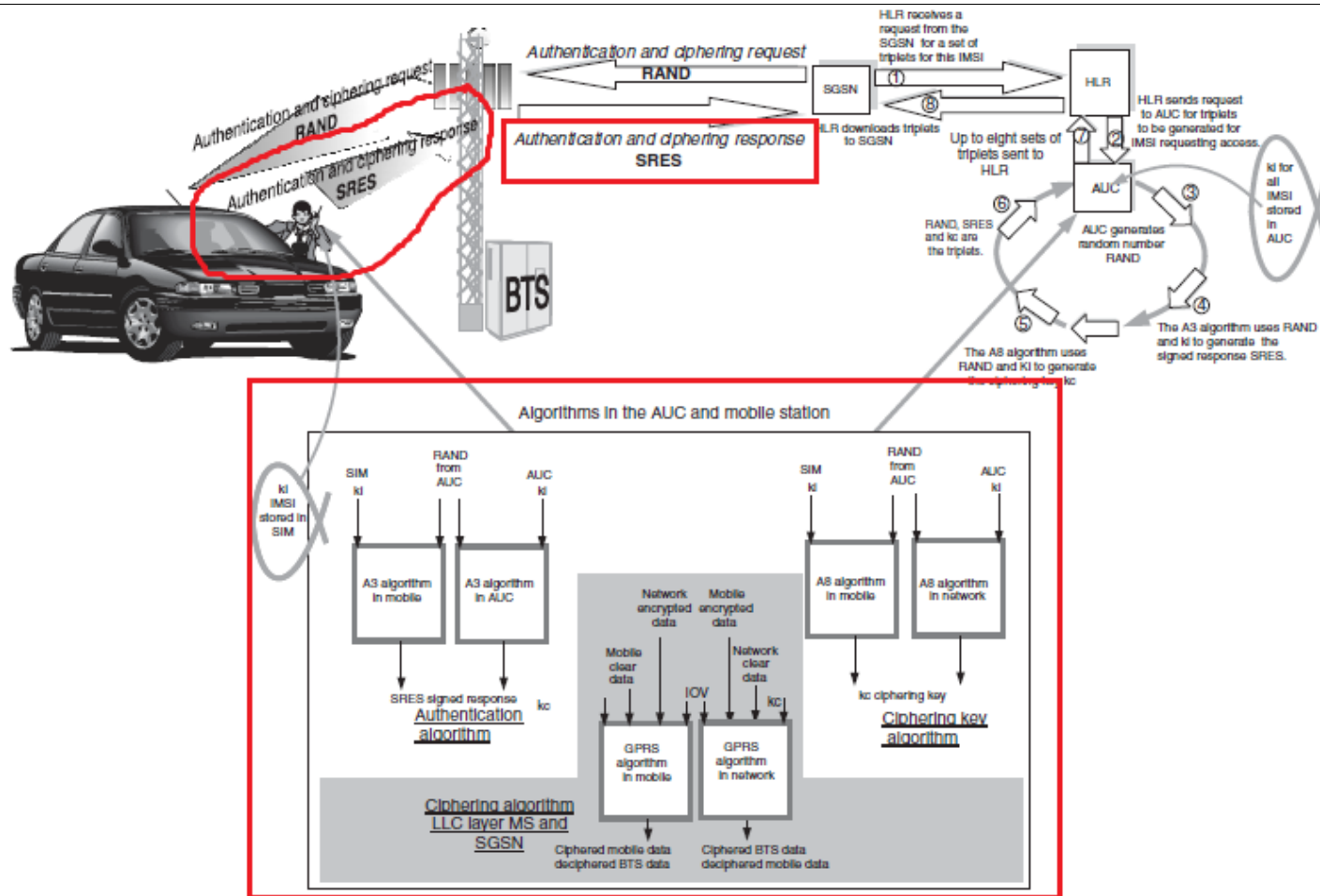


Figure 10.7 GMM procedures – authentication

https://books.google.co.com/books/about/GPRS_in_Practice.html?id=ayRnFl0EvaEC

EXHIBIT 2

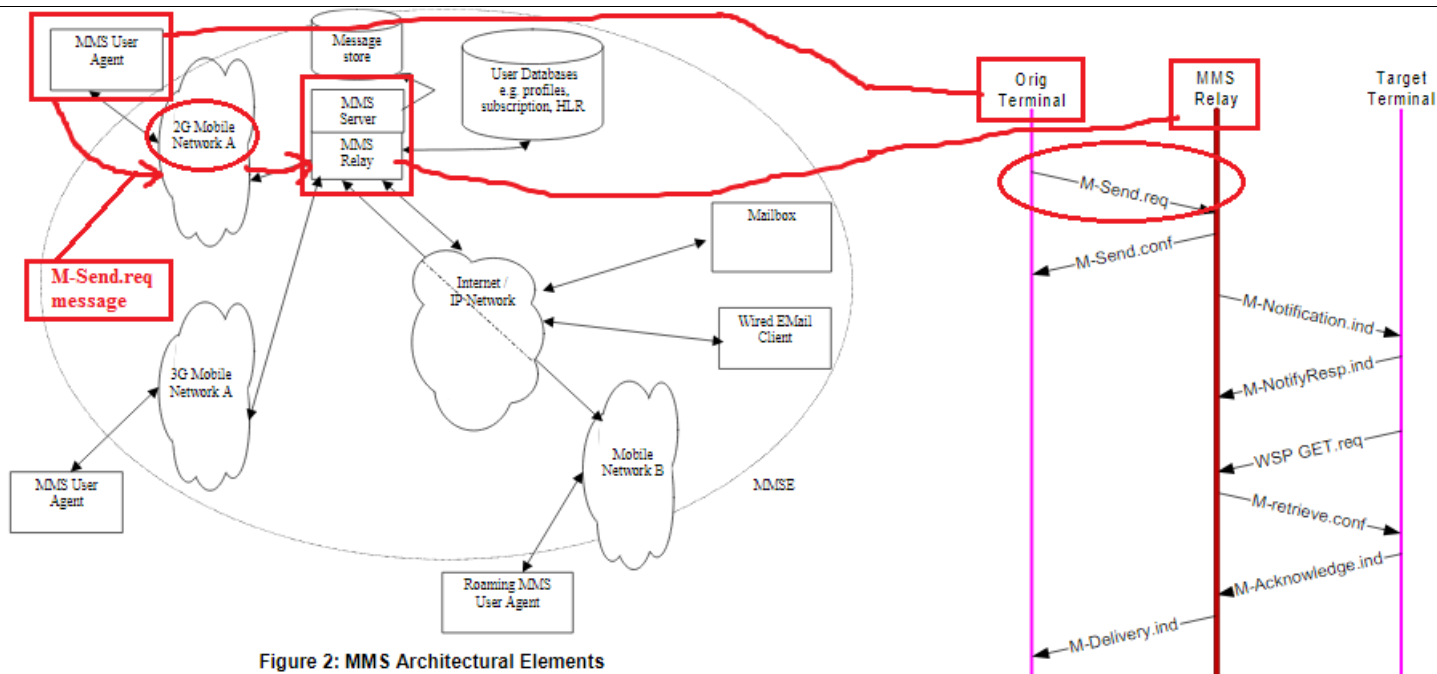


Figure 2: MMS Architectural Elements

Figure 8: Example MMS Transactional Flow in WAP

https://www.etsi.org/deliver/etsi_ts/123100_123199/123140/03.00.01_60/ts_123140v030001p.pdf

EXHIBIT 2

RAND is used as an input to the mobile station SIM card A3 and A8 algorithms along with ki, the mobile station identification key, which is stored on the SIM card. These two algorithms provide the ciphering key, kc, and SRES, the signed response.

The ciphering key and cksn are stored in the mobile station, and the mobile station sends the message *authentication and ciphering response* to the GPRS sub-network GMM layer. This contains the derived parameter SRES.

Simultaneously, the primitive between the mobile station's GMM and LLC layer delivers the derived ciphering key, kc, to the LLC layer. The message *authentication and ciphering response* is not ciphered.

On receiving this message, the GPRS sub-network has authenticated the mobile station if the SRES received is the same as the stored SRES in the GPRS sub-network GMM layer. The GPRS sub-network now also knows that the mobile station has ciphering key kc indexed to the cksn sent (in this case, the RAND is the first of a set, therefore the cksn is '0').

https://www.etsi.org/deliver/etsi_ts/123100_123199/123140/03.00.01_60/ts_123140v030001p.pdf

As shown below, in the event of the success/failure of authorization or authentication, the network can accept or reject the MSS transmission to the recipient.

Error-permanent-service-denied	The corresponding M-Send.req was rejected due to failure of authentication or authorization due to different reasons of the originating MMS Client.	The same action as for the X-Mms-Response-Status 'Error-permanent-failure'. The MMS Proxy-Relay can provide an additional ResponseText to indicate the exact reason why service was denied.
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https://www.openmobilealliance.org/release/MMS/V1_2-20050429-A/OMA-MMS-ENC-V1_2-20050301-A.pdf

determining whether the recipient

The accused product discloses determining whether the recipient mobile phone (e.g., MMS receiving mobile phone) is capable of receiving an MMS (Multimedia Messaging Service) message (e.g., video message, picture message etc.).

EXHIBIT 2

mobile phone is capable of receiving an MMS (Multimedia Messaging Service) message;	<p>AT&T server determines whether recipient mobile phone is capable of receiving MMS message as if it is capable, it send MMS directly to the recipient mobile phone, otherwise it sends an SMS WAP Push message having an URL or link to view the message online.</p> <p><i>Picture and video messaging details</i></p> <p><u>Device and network requirements</u></p> <p><u>Picture and video messaging uses Multimedia Messaging Service (MMS) to send and receive audio, video, and picture messages. To use picture and video messaging:</u></p> <ul style="list-style-type: none"> • <u>You must have a picture and video messaging-capable wireless phone.</u> • You must be on an LTE or GSM network supporting GPRS transport. • Your phone must be on and in a data coverage area to receive the picture or video message. • If the phone is off or out of the coverage area, the message will be stored for up to 72 hours and delivered when the phone becomes available. <p><u>About phones without picture and video messaging</u></p> <p><u>Some wireless phones aren't capable of receiving picture and video messages:</u></p> <ul style="list-style-type: none"> • <u>If your phone isn't capable of receiving a picture or video message, you'll receive a text message explaining how to view it.</u> • <u>If you send a message to a phone incapable of viewing picture and video messages, the recipient receives a text message with a link to view your message online.</u> • Some wireless providers may not deliver these messages to their customers. <p>https://www.att.com/support/article/wireless/KM1041906/</p>
when the recipient mobile phone is capable of receiving an MMS message, having the	<p>The accused product discloses when the recipient mobile phone (e.g., MMS receiving mobile phone) is capable of receiving an MMS message (e.g., video message, picture message etc.), having the video message delivered to the recipient mobile phone (e.g., MMS receiving mobile phone) via an MMS message (e.g., video message, picture message etc.).</p> <p>AT&T server determines whether recipient mobile phone is capable of receiving MMS message as if it is capable, it send MMS directly to the recipient mobile phone, otherwise it sends an SMS WAP Push message having an URL or link to view the message online.</p>

EXHIBIT 2

video
message
delivered to
the recipient
mobile
phone via an
MMS
message;
and

Picture and video messaging details

Device and network requirements

Picture and video messaging uses Multimedia Messaging Service (MMS) to send and receive audio, video, and picture messages. To use picture and video messaging:

- You must have a picture and video messaging-capable wireless phone.
- You must be on an LTE or GSM network supporting GPRS transport.
- Your phone must be on and in a data coverage area to receive the picture or video message.
- If the phone is off or out of the coverage area, the message will be stored for up to 72 hours and delivered when the phone becomes available.

About phones without picture and video messaging

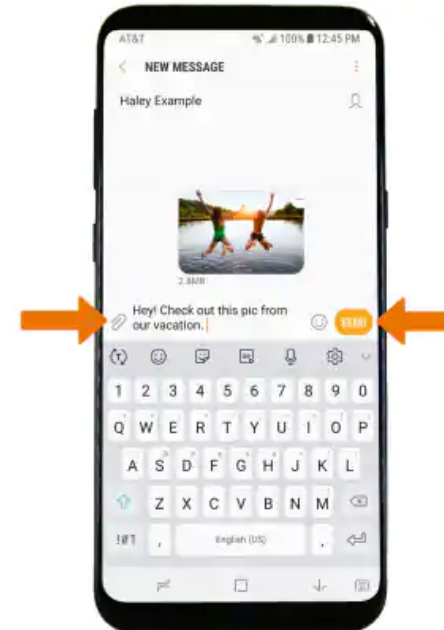
Some wireless phones aren't capable of receiving picture and video messages:

- If your phone isn't capable of receiving a picture or video message, you'll receive a text message explaining how to view it.
- If you send a message to a phone incapable of viewing picture and video messages, the recipient receives a text message with a link to view your message online.
- Some wireless providers may not deliver these messages to their customers.

<https://www.att.com/support/article/wireless/KM1041906/>

EXHIBIT 2

4. Enter the desired **message**. To add an attachment, select the **Attach icon** and follow the on-screen prompts to navigate to the desired **file**. When finished composing the message, select **SEND**.
- Note:** If Advanced Messaging is turned on and you are messaging another device using Advanced Messaging, you can share files up to 10MB, get read receipts, and see when someone is replying. If Advanced Messaging is turned off you can share files up to 1 MB. To learn more, view [Advanced Messaging](#) or visit [att.com/advancedmessaging](https://www.att.com/advancedmessaging).

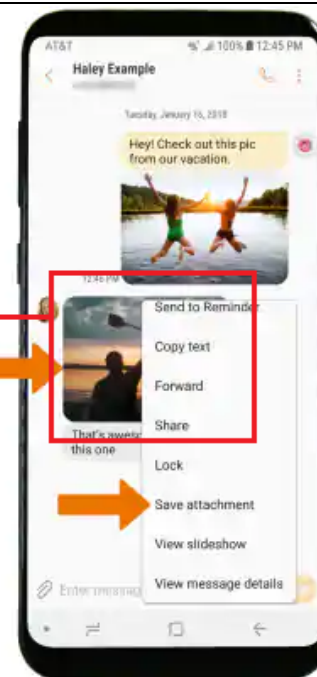


https://www.att.com/devicehowto/tutorial.html#!/stepbystep/id/stepbystep_KM1260642?make=Samsung&model=SamsungG950U

EXHIBIT 2

7. **VIEW/SAVE AN ATTACHMENT:** To view an attachment, select the desired **attachment**. To save an attachment, select and hold the desired **attachment** then select **Save attachment**. **Note:** By default, attachments will be saved to the Downloads folder in the Gallery app. To view saved attachments, from the home screen swipe **up** or **down** from the **center of the screen** to access the Apps tray, then select the **Gallery app > ALBUMS > MORE ALBUMS > Download**.

Received MMS message



https://www.att.com/devicehowto/tutorial.html#!/stepbystep/id/stepbystep_KM1260642?make=Samsung&model=SamsungG950U

when the recipient mobile phone is not capable of receiving an MMS message, having access to the video message provided to

The accused product discloses when the recipient mobile phone (e.g., MMS receiving mobile phone) is not capable of receiving an MMS message (e.g., video message, picture message etc.), having access to the video message provided to the recipient mobile phone (e.g., MMS receiving mobile phone) via a SMS (Short Message Service) WAP (Wireless Application Protocol) push message (e.g., text message containing link to view the MMS online).

AT&T server determines whether recipient mobile phone is capable of receiving MMS message as if it is capable, it send MMS directly to the recipient mobile phone, otherwise it sends an SMS WAP Push message having an URL or link to view the message online.

EXHIBIT 2

<p>the recipient mobile phone via a SMS (Short Message Service) WAP (Wireless Application Protocol) push message,</p>	<p><i>Picture and video messaging details</i></p> <p><u>Device and network requirements</u></p> <p><u>Picture and video messaging uses Multimedia Messaging Service (MMS) to send and receive audio, video, and picture messages. To use picture and video messaging:</u></p> <ul style="list-style-type: none"> • <u>You must have a picture and video messaging-capable wireless phone.</u> • You must be on an LTE or GSM network supporting GPRS transport. • Your phone must be on and in a data coverage area to receive the picture or video message. • If the phone is off or out of the coverage area, the message will be stored for up to 72 hours and delivered when the phone becomes available. <p><u>About phones without picture and video messaging</u></p> <p><u>Some wireless phones aren't capable of receiving picture and video messages:</u></p> <ul style="list-style-type: none"> • <u>If your phone isn't capable of receiving a picture or video message, you'll receive a text message explaining how to view it.</u> • <u>If you send a message to a phone incapable of viewing picture and video messages, the recipient receives a text message with a link to view your message online.</u> • Some wireless providers may not deliver these messages to their customers. <p>https://www.att.com/support/article/wireless/KM1041906/</p>
<p>wherein the SMS WAP push message includes an option of connecting to a specified URL (Uniform Resource</p>	<p>The accused product discloses the SMS WAP push message (e.g., text message containing link to view the MMS online) includes an option of connecting to a specified URL (Uniform Resource Locator) (e.g., link) via a recipient mobile phone (e.g., MMS receiving mobile phone) browser (e.g., mobile phone browser to view the MMS content online) to access the video message.</p>

EXHIBIT 2

Locator) via a recipient mobile phone browser to access the video message.

Picture and video messaging details

Device and network requirements

Picture and video messaging uses Multimedia Messaging Service (MMS) to send and receive audio, video, and picture messages. To use picture and video messaging:

- You must have a picture and video messaging-capable wireless phone.
- You must be on an LTE or GSM network supporting GPRS transport.
- Your phone must be on and in a data coverage area to receive the picture or video message.
- If the phone is off or out of the coverage area, the message will be stored for up to 72 hours and delivered when the phone becomes available.

About phones without picture and video messaging

Some wireless phones aren't capable of receiving picture and video messages:

- If your phone isn't capable of receiving a picture or video message, you'll receive a text message explaining how to view it.
- If you send a message to a phone incapable of viewing picture and video messages, the recipient receives a text message with a link to view your message online.
- Some wireless providers may not deliver these messages to their customers.

<https://www.att.com/support/article/wireless/KM1041906/>